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RETURN RECEIPT REQUESTED

November 4, 2008

Ms. Lucy S. Wang
Associate Environmental Consultant
Eli Lilly and Company, Tippecanoe Laboratories
1650 Lilly Road
Lafayette, Indiana 47909-9201

RE: Plume Stability Assessment and Future Corrective Action Activities
Eli Lilly and Company, Tippecanoe Laboratories
IND 006 050 967

Dear Ms. Wang:

U.S. EPA, Region 5 and the IDEM have reviewed the September 30, 2008, *Corrective Measures Study Report / Section 4 – Plume Stability Analysis* (“Report”). The comments and concerns provided below reflect the perspective of both Agencies.

We believe that the previous operation of the main plant ground water extraction well system appears to have effectively reduced both the volume and areal extent of ground water contamination beneath the main plant. However, we also believe that the data in the Report reveal no clear evidence of stability of the ground water contaminant levels beneath the main plant of the Tippecanoe laboratories and the adjacent floodplain of the Wabash River. This conclusion is supported by the increase in contaminant concentrations in several of the extraction and monitoring wells (i.e., T1804, T1805, T1806, T1808, T1811, T1814, T1815, T1816, T1816MW, T1817MW, T1818, T1819, T1842, T1880, T1889 and T1892) since main plant ground water extraction wells were shut down.

Although some of the wells surrounding the areas with increasing contamination trends may presently indicate stable or decreasing contamination trends, the Report provided no rationale or justification for this behavior. The Report also did not explain why the future behavior of the downgradient wells will be associated with stable or decreasing contaminant levels should the extraction wells remain inoperative. Although Lilly's conclusions imply that some form(s) of natural attenuation is occurring between the zones of increasing contaminant concentrations and the downgradient monitoring wells, evidence for a discussion of natural attenuation is not given in the Report.

We also note that the Unit IV monitoring well T1831, adjacent to the current Point of Compliance (POC) wells for the Wabash River, has consistently shown concentrations of benzene, chlorobenzene and THF significantly in excess of the proposed POC End Point Criteria (Appendix G of the Report). In addition, the contours drawn for the contaminant isoconcentration maps presented in the Report did not include the concentrations detected in T1831 (See the itemized comments below). U.S. EPA and IDEM have also observed that previous stratigraphic studies at the Tippecanoe Laboratories site indicate that wells T1831, T1808 and others lie along the axis of an erosional valley on the upper surface of the Unit II aquitard. When viewed in connection with the contaminant isoconcentration plots, there appears to be a preferential contaminant migration pathway along this subsurface valley, extending from the main plant area past the slurry wall/capture trench and beneath the floodplain to the Wabash River. Comparison of historical potentiometric elevations in T1831 with corresponding USGS Wabash River elevation data supports the conclusion that T1831 is in communication with the River.

Although the Towpath Road slurry wall/capture trench has been effective in removing ground water contamination which is migrating from the main plant to the floodplain, it appears that some portion of the contaminant mass is bypassing the capture system and reaching the Unit IV aquifer downgradient of the slurry wall.

To address our concerns listed above, the U.S. EPA, in consensus with the IDEM, requires that:

- Lilly will submit to the U.S. EPA and IDEM a plan for restarting extraction wells in the areas which have shown increasing contaminant concentrations since the beginning of the shut down exercise. Because the overall extent of the plume has decreased since the extraction of contaminated ground water began at the Tippecanoe Laboratories, U.S. EPA will not require Lilly to restart the entire extraction well array which was in operation before the shut down exercise. U.S. EPA and IDEM consider wells T1809, T1811, T1814, T1815 and T1880 to be of high priority for restarting, because the concentrations of multiple contaminants are increasing in each of these locations.

- Lilly will conduct a monitored natural attenuation (MNA) study for the main plant area ground water contamination, where the centers of the contaminant mass are located and where the monitoring and extraction wells indicate increasing contaminant concentrations. Lilly will calculate target contaminant levels in the plume source area wells which will ensure that contaminant concentrations in downgradient main plant wells remain stable or decreasing, and that POC End Point Criteria will not be exceeded should the main plant extraction wells be permanently shut down at some future time. The MNA study will be conducted in accordance with the U.S. EPA's April 1999 *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, OSWER Directive 9200.4-17P and the April 2004 *Performance Monitoring of MNA Remedies for VOCs in Ground Water*, EPA/600R-04/027. The MNA assessment will be jointly reviewed by the U.S. EPA and the IDEM.
- All of the individual contaminant and total VOC isoconcentration maps included in the Report will be revised and expanded. The revised maps will be focused upon the area of contamination (on the main plant and the Wabash River floodplain) so that the expanded outer-concentration contour will cover most of the page and clearly depict the relationship between the inferred concentration contours and the concentration data from the wells. The contours on the revised maps will include data from T1831, T1832 and all other Unit IV monitoring wells which were sampled downgradient of the slurry wall/capture trench.
- Because of the U.S. EPA and IDEM's concerns over concentrations of benzene, chlorobenzene and THF at T1831 which have consistently exceeded the respective POC End Point Criteria, T1831 will be included as a POC monitoring well.
- Because contamination at T1831 is likely in communication with the Wabash River, Lilly will install an extraction well at this location, and will pump the extracted contamination to the facility waste water treatment plant.
- Lilly will establish cleanup target concentrations at T1831 that will be protective of the Wabash River. In addition, the MNA study will include Unit IV and T1831.

In response to your request for a meeting, U.S. EPA and IDEM are willing to discuss these comments and the Report. Please contact me at (312) 353-1248 or by e-mail at Heller.Donald@epa.gov and I will help schedule a meeting or conference call.

Sincerely,

Donald A. Heller, Corrective Action Project Manager
Corrective Action Section 1
Remediation and Reuse Branch

cc: David Petrovski, Dan Mazur, Mario Mangino – RRB
Doug Griffin, Paula Bansch – IDEM